Application Serial No.: 10/601,881 Docket No.: N.C. 84,353
Applicant(s): Long et al.

REMARKS

Claims 1-12 are pending in this application. Claims 1-12 have been rejected.

Claims 1, 3, 5, 7, and 11 are currently amended.

Rejection under 35 USC 103

The Examiner has rejected Claims 1-5 and 7-11 under 35 U.S.C. 103(a) as being unpatentable over Leventis et al. (US 5,282,955) in view of Sugnaux et al. (US 2004/0131934 A1). The Examiner states that Leventis discloses an electrode made of an electrically conductive metal oxide and being coated with an electrically conductive polymer, wherein the polymer coating is conformal and based on an arylamine polymer, specifically being aniline and polyaniline, and being electrodeposited on the electrode.

The Examiner then states that Leventis does not disclose the electrode being a nanostructured, mesoporous metal oxide, wherein said metal oxide is selected from the said group. The Examiner continues by stating that Sugnaux discloses an electrode active material that exhibits mesoporous porosity and wherein the electrode active material comprises discrete solid connecting particles.

The Examiner concludes by stating that it would have been obvious to use the nanostructured, mesoporous metal oxide electrodes of Sugnaux in conjunction with the polymer coating of Leventis for the purpose of forming electrodes with a large specific surface area for use in batteries, photovoltaic cells, supercapacitors and fast electrochromic devices.

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Applicants respectfully submit the following traversal. The current application concerns a material comprising three-dimensional bicontinuous networks of solid and pores, where the pores are interconnected throughout the nanostructure. This physical arrangement of pore and solid is distinct from a simple nanostructured mesoporous material as described in the Sugnaux reference wherein the Sugnaux concerns a simple collection of nanostructures and pores that do not contain a perfectly interpenetrating connectivity of pores.

Applicants respectfully submit that the present application concerns a nanostructured electrically conductive metal oxide *interpenetrated by a continuous mesoporous network* and an ultrathin, conformal polymer coating on the metal oxide. The present invention provides for a nanostructured electrically conductive metal oxide wherein there exists *connectivity of the pore network even upon deposition of an ultrathin, conformal polymer coating on the metal oxide network.*

As noted by the Examiner, the Leventis reference does not describe a mesoporous metal oxide. The Examiner then states that Sugnaux discloses a material that exhibits mesoporous porosity and comprises discrete solid connecting particles.

The current application involves the versatility of electrically conductive aerogels, ambigels, xerogels and related structures. Furthermore, the current application involves the *inherent* continuous mesoporosity of the metal oxide nanoarchitecture. (paragraph [0007] page 3 and paragraph [0012] page 5 of application as originally filed) Applicants respectfully submit that the inherent continuous mesoporosity is distinct from Sugnaux which uses discrete particles "that form a mesoporous network layer." (paragraph [0001] of Sugnaux) Not only does the current application concern a bicontinuous, interpenetrating inherent mesoporosity with connectivity of the pore network that is different from the Sugnaux network that is formed from

discrete particles but also the Sugnaux concerns only a "layer." (paragraph [0001] of Sugnaux) However, the current application concerns a *three-dimensional* bicontinuous interpenetrating porous network, not just a layer. In other words, the reference may contain citations to porosity but the reference does not have and does not teach and cannot achieve the interpenetrating porosity of the present invention.

As such, Applicants respectfully request reconsideration as to, and removal of, the rejection of claims 1-12.

The Examiner states that, with respect to Claims 6 and 11, Leventis discloses the electrode of the Claims 1 and 7, but does not disclose the polymer coating of the electrode wherein said polymer coating is less than 10-nm thick. The Examiner then states that it would have been obvious to use a polymer layer of less than 10-nm because the thinner the polymer layer the smaller and more desirable the device is and that it is routine to discover an optimum value.

Applicants wish to thank the Examiner for the suggestion that if evidence is provided that unexpected results can be reached by using a polymer layer of less than 10-nm, the rejection will be withdrawn.

However, Applicants respectfully submit that the current invention concern a three-dimensional architecture having a bicontinuous, interpenetrating inherent mesoporosity with connectivity of the pore network. As such, Applicants respectfully that this is distinct from the references cited and therefore it was not obvious to use a polymer coating. Furthermore, as the references concern a different structure, it was not known or suggested what thickness of a

polymer coating if any, would work with the current invention. Therefore, obtaining the claimed thickness cannot be said to have been routine.

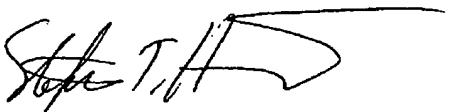
Conclusion

In conclusion, Applicants respectfully submit that the Examiner's Office Action has been fully responded to and that the claims are in condition for allowance. In the furtherance of compact prosecution, if a personal or telephone interview would help expedite matters, the Examiner is requested to contact Steve Hunnius at 202-404-1554.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 50-0281.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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